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YELLOW RIVER BRIDGE ON PEIPING-HANKOW LINE CAN HANDLE ALL TRAIN SPEEDS AND WEIGHTS

Summary: The Yellow River Bridge on the Peiping-Hankow Line has been completely repaired and now can handle traffic nine times greater in volume than that prior to liberation, with no restriction as to weight of locomotives or weight and speed of trains.

Plans for strengthening the bridge, developed by Soviet advisers, were carried out in five stages. The operations of the first three stages, accomplished in September 1950, included replacement of all ties and rails with new ones, testing of the quality of steel and the strength of the trusses to determine the nature and amount of strengthening needed, and the reinforcement of the trusses as indicated by the tests.

The work of the fourth and fifth stages, completed in October 1952, included the repair and reinforcement of the bridge piers, in which damaged pipe piles were replaced by piles made from steel rails riveted together, and the replacement of all the old bridge trusses with new ones.

On 7 November 1952, locomotive 2077, Mikado No 1 type, drew a train of 62 cars, with a load of 2,400 tons, across the bridge at a speed of 60 kilometers per hour.

YELLOW RIVER BRIDGE NOW "AS GOOD AS NEW" -- Hong, Kong, Wen-hui Pao, 12 Nov 52

K'ai-feng, 11 November -- The Yellow River Bridge, on the Peiping-Hankow Line near Cheng-chou, is now as good as new, and at a cost of only 30 percent of that of a new bridge. The task of reconstruction was begun in December 1949 and has been carried forward continuously since then in five stages. The fifth stage was completed at the end of October 1952, and celebration of the completed reconstruction took place at the bridge site on 7 November 1952.

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There is now no restriction on the weight of locomotives, on the length or weight of trains, nor on the speed at which they may cross the bridge. The capacity of the bridge to handle train traffic between the two stations at either end of the bridge, Yellow River North and Yellow River South, which are 5 kilometers apart, is now nine times what it was prior to liberation.

RECONSTRUCTION OF THE BRIDGE-- Hong Kong, Ta Kung Pao, 14 Nov 52

K'ai-feng, 12 November (Hsin-hua) -- In November 1949, Soviet Railway Bridge Expert Chikorenko began a meticulous examination of the bridge and all of its members. On this basis of this examination, he stated that the bridge could be strengthened so as to give good service for some years to come, and that it would be much more economical to strengthen this bridge than to build a new one at this time.

The Central People's Government accepted the advice of Soviet Advisers Chikorenko and Zhilin and instructed the Cheng-chou Railway Bureau to effect the reconstruction of the bridge in accordance with this advice. Chikorenko and Zhilin then proceeded to develop the plans and supervise the execution of the first three of five stages of operations. This work was accomplished in September 1950. For an account of these [redacted]

The plans of the fourth and fifth stages were drawn up and their execution supervised by Soviet Adviser Gekhonov. Originally, the piers supporting the superstructure were formed of steel-pipe piles screwed into the bed of the river and braced together. In the course of time, many of these piles had been more or less seriously damaged. Some had been replaced by wooden piles which were not as strong or durable as the original piles. To replace the damaged pipe piles with other pipe piles was found to be impossible, because there was no way by which they could be screwed through the layer of rock which in past years had been dumped into the river bed to prevent scouring at times of flood. Consequently, the load which the bridge could safely sustain was greatly reduced. This was the most serious problem which had gone unsolved for many years.

Gekhonov's solution was to rivet four steel rails together to form one pile, and to drive them through the layer of rock. Another feature of his advice was to make use of willow withe mattresses and rock to be sunk at the foot of the piers for their protection.

Gekhonov claimed that such steel rail piles would be as strong as the original pipe piles, be equally able to carry the weight of the heaviest locomotives, and their use would restore the uniformly ample load capacity for all the piers of the bridge. This method had never before been used on the Yellow River Bridge, and the Chinese engineers were doubtful as to its practicability. So in the summer of 1951, Gekhonov had a pile made up of four steel rails and had it driven into the bank of the river using a ram weighing 1,300 pounds in the pile driver. Then by placing weights upon it, it was proved that the pile could support a weight of 190 tons or more. Each small pier was to have four such piles, and the large piers six piles. This proved that piers thus repaired or strengthened would be able to support the weight of the heaviest locomotives. In view of this demonstration, the Chinese engineers were convinced, and in the fourth stage of the operations this method was followed to strengthen all of the damaged piers. The use of willow mattresses was also proven to be effective and was adopted by the railway engineers as an indispensible method for protecting the bridge.

The work of the fifth stage was to replace all of the 100 bridge spans with new spans, simultaneously adjust the height of some of the piers to assure uniformity, and to attend to any other needed repairs. These tasks were much greater and more difficult than all that had been previously undertaken. In May 1951, when this work was about to begin, a debate arose as to whether it was possible to carry out the replacement of trusses without suspending train operations over the bridge. Some engineers considered that it would be necessary to suspend use of the bridge for 1-2 months, and that during that period the through trains between Peiping and Hankow would have to be rerouted using the Tientsin-P'u-k'ou Line between Peiping and Suchow, and the Lung-Hai Line between Suchow and Cheng-chou. This was objected to on the ground that it would put too great a burden on the other lines and disrupt the rail transportation of the whole country.

Gekhonov was summoned again from Heng-yang, and at Cheng-chou met Lu Cheng-ts'ao, one of the vice-ministers of railways. As a result of their consultation it was decided not to have the trains make any detour, nor to have them stop using the bridge for any long period, but to carry on both operations even though it might take a little longer to complete the installation of the new spans. This was effected by adjusting the train schedules so that the bridge workers had at least one uninterrupted 8-hour work period during each 24-hour day. Thus, there was no suspension of train service even for one day.

Now through the earnest and intelligent aid of the Soviet advisers, and the industry, resourcefulness, and fortitude of the Chinese engineers and workmen, the reconstruction of the Yellow River Bridge has been victoriously completed, and we have a bridge that is as good as new, at a cost of only 30 percent of what a new bridge would cost at this time, and at a great saving in time. This sore on the Peiping-Hankow Line has now been removed, and this line is now able fully to resume its place as one of the main north-south arteries of transportation.--Yuan P'eng, staff writer, Hsin-hua She

STAGES IN STRENGTHENING THE BRIDGE--Peiping, Kung-jen Jih-pao, 14 Nov 52

The five stages in the strengthening of the Yellow River Bridge were as follows:

The first stage of operations, carried out in January 1950, included the replacement of all ties and rails with new material, repairs to piers No 15 and No 22; and the inspection and tightening of all bolts on the trusses.

The second stage, carried out February - March 1950, included testing by scientific techniques of the steel in the existing trusses, the load capacity of each span, and the determination of the nature and amount of strengthening needed to make them able to meet standard requirements.

The third stage, carried out May - September 1950, included the repair and reinforcement of existing spans in the light of the tests and calculations indicated in stage No 2.

The fourth stage, carried out April - June 1951, included replacement of damaged piles in bridge piers, and alignment of piers.

The fifth stage, carried out June 1951 - October 1952, included the replacement of all old bridge trusses with new trusses, adjustment of height of piers, and all other repair work not already attended to.

[The article concluded with the following statement:]

"The strengthening of this railway bridge has been carried out in five stages in step with the expanding volume of traffic on this line. For the past 3 years it has assured us of normal transportation on this line. But if a new bridge is to be built, it will require more than two years, and during that period the burden of transportation will have to be carried by the old bridge. Hence, it still will be necessary to continue work on the strengthening of the old bridge and for the country to provide the expenses entailed in its maintenance."--Liu Chien-chang, chief of Cheng-chou Railway Bureau.

NORMAL TRAFFIC RESUMED ON BRIDGE--Peiping, Kung-jen Jih-pao, 13 Nov 52

On 7 November, during the ceremony celebrating the completion of this great strengthening project, a Mikado No 1 type locomotive, No 2077, pulled a train of 62 cars, weighing a total of 2,400 tons, across the bridge at a speed of 60 kilometers per hour.

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